State Of California | The Resources Agency of California

Memorandum

Date : May 14, 1999
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To : Commissioner David Rohy
Commissioner Michal Moore

File: 98-AFC-1

From : California Energy Commission - Lorraine White
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Subject : **Supplemental Testimony to the Pittsburg District Energy Facility (98-AFC-1) Staff Assessment**

In its May 7, 1999 Notice of Evidentiary Hearings, the California Energy Commission's Siting Committee for the Pittsburg District Energy Facility (PDEF), directed parties to file additional written testimony on Air Quality, Public Health, and cumulative impacts on Water Resources.

On March 10, 1999, the Energy Commission staff originally filed its Staff Assessment for the Pittsburg District Energy Facility (PDEF). In addition, staff filed supplemental testimony on April 12, 1999 in the areas of the project description, public health, worker safety and fire protection, land use, traffic and transportation, noise, visual resources, cultural resources, socioeconomics, biological resources, soils and water resources, facility design, and transmission system engineering. This testimony was the subject of formal hearings by the PDEF siting committee on April 28, 29 and May 3, 4, 1999. The filings included partial testimony on Air Quality, Public Health, and Water Resources.

SUMMARY OF THE SUPPLEMENTAL DOCUMENTS

Staff has completed its analysis of the PDEF proposal. This supplemental testimony discusses staffs final analysis of the PDEF in the areas of Air Quality. Water Resources supplemental testimony will be filed May 17, 1999. The Air Quality supplemental testimony addresses the potential for cumulative impacts, potential impacts associated with the Truck Bypass Road and staff's proposed conditions of certification. The Water Resources supplemental testimony provides staff's cumulative analysis and conclusions.

Staff has determined as a result of completing its air quality and water resources analysis that testimony previously filed in the area of Public Health fully addressed potential impacts and related issues.

Attachment
cc: Proof of Service

AIR QUALITY

Supplemental Testimony of Guido Franco

INTRODUCTION

Staff's original Air Quality assessment was filed on March 10, 1999. This supplemental testimony augments the original testimony by providing: 1) a discussion of the cumulative impacts from the proposed power plant and other sources that may affect air quality in the same general area; 2) a discussion of the potential air quality impacts from the proposed truck bypass road; and 3) proposed permit conditions that are in general agreement with the draft permit conditions included in the Preliminary Determination of Compliance (DOC). These conditions have been modified to take into account more restrictive permit conditions, which have been accepted by the applicant, and are expected to be adopted in the Final DOC. At the time of the preparation of this supplemental testimony, the applicant has not yet provided a complete package of approved offsets. We also expect the Bay Area Air Quality Management District (BAAQMD) to adjust the emission control requirements in the final DOC in response to comments from the U.S. Environmental Protection Agency (EPA) and the Air Resources Board (ARB).

CUMULATIVE IMPACTS

This cumulative impact analysis addresses the combined effects of the Pittsburg District Energy Facility (PDEF), the proposed Delta Energy Center (DEC), and the existing Contra Costa and Pittsburg power plants, which were previously owned by PG&E but recently purchased by Southern Energy Inc. In this discussion, we refer to these power plants as the Southern power plants. We assumed that the emissions of the Southern power plants would increase from their historical levels because of changes in ownership. The Southern Contra Costa power plant would increase emissions by 361 tons per year (tpy) for NO_x and 83 tpy for PM10. This represents an increase in emissions from historical levels (1995 to 1997 period) of about 50 percent and 160 percent for NO_x and PM10 respectively. For the Southern Pittsburg power plant, we assumed an increase in emissions of 1,642 tpy for NO_x and 205 tpy for PM10. This represents an increase in emissions from historical levels of about 90 percent and 146 percent for NO_x and PM10, respectively. We calculated these numbers using the results of the electricity system modeling performed for the Environmental Impact Report (EIR) prepared for the divestiture (selling) of the PG&E power plants (CPUC, 1998). These emissions correspond to the modeled incremental emissions from a modeled baseline that may occur in 2001, when the PDEF power plant would be in operation. The DEC will probably begin operating in 2002; however, for the purpose of this analysis we assumed that the DEC would be in operation in 2001.

It is important to note that the BAAQMD Regulation 9, Rule 11 limits the amount of NO_x and CO that can be emitted from all the previously owned PG&E power plants inside the BAAQMD's boundaries. To comply with this rule, the PG&E system-wide NO_x emission rate in pounds per million Btu must go down every year, ending in the year 2005, to a rate that is one tenth of the 1997 system-wide emission rate.

Because these plants have been sold, Rule 11 will have to be modified to take into account that the power plants may have multiple owners. The BAAQMD has indicated that the rule modification will maintain the intent of the original rule, e.g., to reduce NO_x and CO emissions from the existing power plants under its jurisdiction.

The EIR assumed that the new owners of the power plants would be able to purchase unlimited quantities of natural gas at a 25 percent discount from the least expensive supply of gas available to fuel California power plants. Although, according to the EIR, this is an extremely unlikely scenario, it was envisioned only to develop a very conservative analysis. Even with this assumption, the electricity system modeling results indicate that NO_x emission levels in 2005 would be lower than historical emission levels. This is again a result of the implementation of Rule 11 or its future amendments.

We only modeled the incremental emissions because we are interested in the potential incremental impacts from the Southern power plants that have not been already accounted for in the existing background ambient concentrations measured in the Pittsburg region. We only examined PM10 and NO_2 impacts, since the impacts of the other pollutants, CO and SO_2, are relatively minor. Even if we assume (incorrectly) for CO and SO_2 that the impacts from PDEF and DEC occur at the same place at the same time, the total impacts are far below the most stringent applicable ambient air quality standards. In addition, in the case of carbon monoxide, the proposed permitted levels (concentration at the stack) for the new power plants are on the order of 6 parts per million (ppm). Since this concentration is well below the California 1-hour average ambient air quality standard of 20 ppm, it is inconceivable to expect any significant impact on ambient CO concentrations.

The CALMET/CALPUFF modeling system was used for the analysis. This new modeling system is currently being proposed by the U.S. EPA for use in estimating short range impacts in situations with complex topography and meteorology (Paine, 1999). Several features of the CALMET/CALPUFF model are important for this application, including its ability to more realistically estimate mixing heights, to take into consideration the three dimensional nature of the wind fields, as well as the factors of transport and diffusion. Given the CALMET/CALPUFF's ability to consider three-dimensional wind fields, it should more realistically estimate impacts from multiple sources.

AIR QUALITY Table 9 presents the results of the modeling analysis. As shown in this table, NO_2 impacts are below the most stringent NO_2 ambient air quality standards. This is in spite of the fact that the cumulative modeling analysis was done assuming that all the NO_x emissions leaving the stack are in the form of NO_2. It is well known that most NO_x emissions will be in the form of NO. Although NO_x emissions include both NO and NO_2, NO has to be oxidized in the atmosphere to NO_2 in order to have an air quality NO_2 impact.

There has been a decline in NO_x emissions in the San Francisco Bay Area air basin that has resulted in declining NO_2 ambient concentrations throughout the air basin, including NO_2 concentrations measured in Pittsburg (see **AIR QUALITY Figure 1** in

AIR QUALITY Table 9
Summary of Cumulative Impact Modeling

Pollutant	Averaging Time	PDEF ($\mu g/m^3$)	Southern Pittsburg ($\mu g/m^3$)	Southern Contra Costa ($\mu g/m^3$)	Delta Energy Center ($\mu g/m^3$)	Cumulative Incremental Impacts ($\mu g/m^3$)	Maximum Background ($\mu g/m^3$)	Maximum Total Impacts ($\mu g/m^3$)	Most Stringent Standard ($\mu g/m^3$)	Ratio Total Impacts to Standard
NO_2	1-hour	16.1	157	38.6	37.3	157	188	345	470[a]	0.73
NO_2	Annual	0.65	16.7	2.1	0.69	17.0	32.1	49.1	100[b]	0.49
PM10	24-hour	3.47	12.96	3.08	2.25	12.96	87.0	100	50[a]	2.0
PM10	Annual	0.58	2.09	0.48	0.39	2.27	20.2	22.5	30[a]	0.75

[a] California Ambient Air Quality Standard
[b] National Ambient Air Quality Standard

Source: Scire, 1999

NO_2 impacts were calculated assuming that all the NO_x emissions are NO_2. In practice, most of the NO_x emissions are released as NO. Actual NO_2 incremental impacts are, therefore, much lower than the values presented in this table.

The maximum hourly background NO_2 concentration of 188 $\mu g/m^3$ is the maximum concentration measured from 1993 to 1995 (Table 5.2-16 AFC Supplement). Concentrations in subsequent years have continued to decline and in 1998 the maximum hourly NO_2 concentration measured in Pittsburg was 120.3 $\mu g/m^3$. The maximum 24-hour PM10 concentrations measured in 1998 in Bethel Island and Concord were 67 $\mu g/m^3$ and 66 $\mu g/m^3$, respectively (BAAQMD, 1999).

the March, 1999 staff assessment). Ambient NO_2 concentrations should, at a minimum, not increase in the foreseeable future due to the implementation of the control measures already included in the air quality management plans approved by the BAAQMD. For example, the 1997 Clean Air Plan (BAAQMD, 1997) estimates that NO_x emissions in the air basin will go down by approximately 11 and 27 percent from 1997 levels by 2000 and 2010, respectively.

The maximum cumulative NO_2 impacts from all the sources considered are mostly due to the higher emissions from the Southern Pittsburg power plant, because it is an older, less efficient power plant. The emissions from the Southern power plant will not contribute substantially to the maximum expected cumulative impacts from the modeled power plants because its plume do not substantially interact with the plume from the other modeled power plants.

The worst case 24-hour average PM10 cumulative impact is due primarily to the PM10 emissions from the Southern power plant. PDEF will not contribute to these maximum cumulative 24-hour average PM10 impacts. The maximum 24-hour average impact from the PDEF is on the order of 3.47 $\mu g/m^3$. This impact level is probably overestimated due to the fact that the assumed emission level of 17 pounds per hour per gas turbine is well above the emission levels measured in other similar power plants in California.

The maximum total 24-hour and annual PM10 impacts presented in **AIR QUALITY Table 9** represent the worst case scenario because the worst case incremental impacts are assumed to coincide in time with the worst-case background concentrations. However, the maximum PM10 background concentrations are usually observed in the wintertime while the maximum modeled cumulative incremental impacts do not occur during this time of the year.

There has also been a decline in PM10 concentrations in Contra Costa County as shown in **AIR QUALITY Figure 1** in the March 1999 assessment. This situation is expected to continue in the future due to continue reduction of NO_x, SO_x, and VOC emissions, which are PM10 precursors. For example, VOC emissions in the year 2010 are expected to be 26 percent lower than the 1997 emission levels (BAAQMD, 1997). SO_x emissions have also decreased and are expected to continue below historical levels, mainly due to the introduction of phase 2 reformulated gasoline (Kirchstetter, 1999). Finally the BAAQMD's Spare the Air Tonight voluntary program may result in significant reductions of PM10 emissions from woodburning, which is believed to be responsible for about 30 percent of the PM10 ambient concentrations during winter time PM10 episodes.

In summary, the operation of the PDEF project added to the existing and planned "projects" in the same area will not result in violations of the NO_2 standard. The incremental impacts from the PDEF project will not result in cumulative significant PM10 impacts.

OFFSET PACKAGE

The PDEF project, if approved, will be required by the BAAQMD to provide offsets on an annual basis (tons per year (tpy)) for NO_x, VOC, and PM10 as shown in **AIR QUALITY Table 10**. At the time of the preparation of this supplemental testimony, the applicant has not yet secured sufficient offsets. The applicant has signed options contracts with potential sources of offsets located in the Cities of Antioch, Oakland, and San Jose. However, some of the offsets from these sources are still in the review process. The applicant is also proposing interpollutant offsets for PM10. In this case, SO_x offsets would be used to offset, at least in part, direct PM10 emissions. The BAAQMD has indicated that a 4 to 1 ratio is required for interpollutant offsets of SO_x for PM10.

AIR QUALITY Table 10
Maximum Annual NO_x, VOC, and PM10 Emissions and Offsets

Pollutant	Emissions (tpy)	Offset Ratio	Offsets (tpy)
NO_x	153.2	1.15:1	176.18
VOC	125.3	1.15:1	144
PM10	123.55	1:1	123.55

AIR QUALITY Table 11 presents the applicant's proposed offset package. This package is not final since some of the sources of offsets are still going through the regulatory process of certifying their emission reductions as valid sources of offsets (banking). If the sources are certified as valid offsets, the applicant will have enough offsets to satisfy the BAAQMD's requirements even if the interpollutant trading is used.

AIR QUALITY Table 11
Potential Source of Offsets

	NOx (tpy))	VOC (tpy)	PM10 (tpy)
Owens-Brockway Certificate #518	73.62		42.8
Owens-Brockway Cerificate #518			11.57[1]
Owens-Broackway Unbanked Credits	215.73		55.33
Owens-Broackway Unbanked Credits		10.78	14.3[2]
Quebecor Printing San Jose, Inc. Unbanked Credits		144	

1 Interpollutant offsets of 46.3 tpy of SOx (ratio of 4:1, which means that 4 tpy of SOx offset 1 tpy of directly emitted PM10)
2 Credits are for 138 tpy. Of this 57.2 tpy would be traded for PM10 (ratio of 4:1)

Source: March 10, 1999 letter to Mr. Dennis Jang from Samuel When, PDEF L.L.C.

The Owens-Brockway Certicate #518 was obtained from the shut-down early in 1992 of combustion sources (glass melting furnaces and heat treatment units) at a facility located in the City of Oakland. The unbanked credits from the same company would be generated from the permanent closure of their facility in Antioch that occurred in June 1997, which resulted in the permanent shut-down of a glass melting furnace. The Quebecor's unbanked credits would be generated form the use of a solvent recovery system at a rotogravure printing facility located in San Jose. A carbon adsorption system recovers solvents from exhaust streams. The adsorbed organics are stripped from the carbon and recycled as solvents. The BAAQMD estimates that this system will reduce emissions by 500 tons per year. This reduction will be enforced with changes of the permit conditions for this facility. If the applicant is able to secure offsets in Antioch we will suggest that all the SO_x used for interpollutant offsets for PM10 should come from the source located in Antioch.

Since the offsets are provided on an annual basis to match the project's annual emissions limit, as required by the BAAQMD, the offsets calculated on a daily basis (annual offsets divided by 365 days) will be less than the daily emissions limit for the project. This is the case because the annual emissions limit is less than the sum of the daily emissions limits. Because the BAAQMD is currently non-attainment for the federal 1-hour ozone standard and the state 24-hour PM10 standard, staff is concerned that project emissions, where not offset, could potentially contribute to existing violations of these standards. To minimize the potential for such contributions the staff has proposed a reduction in the daily emissions limits for the project, as discussed in the following paragraph.

AIR QUALITY Table 12 presents the daily emission limits included in the Preliminary Determination of Compliance for NO_x, VOC, and PM10. The same table includes the daily emission limits suggested by the staff and accepted by the applicant. We suggested lower daily emission limits because we believe that emissions during start-up conditions, which dominate the daily NO_x and VOC emission calculations, can be minimized with adequate operational practices. The applicant will develop a start-up plan, in consultation with the manufacturers of the gas turbine, HRSG, and the control systems, indicating how they will operate the power plant in order to minimize emissions during start-up conditions. We believe that the implementation of the start-up plan will substantially reduce emissions during these transient conditions. This plan will also result in a minimization of the actual daily NO_x and VOC emissions. From our experience with other power plants in California, including the Crockett cogeneration power plant, the actual daily emission levels are expected to be significantly lower than the permitted levels (New Emission Limits) presented in **AIR QUALITY Tables 12** (see **AIR QUALITY Tables 7 and 8** in the March 1999 testimony).

AIR QUALITY Table 12
Daily Emission Limits (lb/day)

Pollutant	Emission Limits In the PDOC	New Emission Limits	Offsets
NO_x	1330	1190[1]	965.37
VOC	1096	907	789.04
PM10	842	842	677
1 Up to ten days per year are allowed at 1330 pounds per day to take into account the possibility of two cold start-ups.			

In addition to staff's recommendation that the project's daily emission limits be reduced, both the ARB and EPA recommended in their comments on the PDOC that the BACT requirements for the project be revised, and that the evaluation (banking) of the proposed offsets be completed. On May 5, 1999, the staff met with representatives of the BAAQMD, ARB and EPA, and discussed the concerns raised by ARB and EPA. As a result of the discussions the agencies reached agreement on how the concerns will be addressed in the Final DOC. Therefore, we expect that the Final DOC, when issued, will be acceptable to ARB and EPA.

AIR QUALITY IMPACTS OF THE PROPOSED TRUCK BYPASS ROAD

The proposed truck bypass road will divert traffic now using Harbor Street and Railroad Avenue to a route east of Columbia Street, north of Santa Fe (**see AFC Figure 5.11-1**). The city of Pittsburg certified an EIR in 1992 for the Waterfront Truck Route and Proposed Assessment District project. The PDEF project includes the same truck route as the one considered in the EIR. However, the number of vehicles expected from the PDEF proposed truck route would be significantly lower because it does not include the additional facilities originally envisioned for the Assessment District (for a complete discussion on this matter please see the Revised Testimony on Traffic and Transportation).

As with any transportation-related analysis, the EIR includes a discussion on carbon monoxide (CO) and particulate matter (PM10) impacts. According to the EIR, "Carbon monoxide concentrations under worst-case meteorological conditions have been predicted along four roadway segments where volumes of cars and trucks would be changed by the project using the CALINE-4 computer model." The EIR did not find any violations of the CO ambient air quality standards, and future concentrations were expected to be below historical levels due to declining CO emission rates. With respect to PM10, the EIR indicates that, in general, the homes close to the proposed route west of Columbia Street "would not be downwind of the new road under prevailing wind conditions, but PM-10 and road dust could affect nearby homes occasionally when the wind blows from certain directions."

The EIR also briefly discusses the potential impacts on regional pollutants, such as ozone from the hypothetical increase in vehicle miles traveled (VMT) due to the use of the new route instead of more direct routes. The EIR indicates that the potential

increase in NO_x and VOC daily emissions would be below the threshold levels of significance (CEQA interpretation) determined by the BAAQMD.

The applicant is proposing to build a 12 feet high soundwall facing Columbia and Santa Fe Streets. One added benefit of the soundwall will be the potential retention of at least part of the fugitive dust and tail pipe emissions that would be transported to the west when winds blow from the east (east to west direction). Residential areas located to the west of Columbia Street would be somewhat protected by this wall from fugitive emissions and tailpipe emissions generated by the vehicular traffic along the proposed route. It is also important to mention that without the proposed route, traffic would flow through Harbor Street and Railroad Avenue, which are west of the aforementioned residential areas. In this case, under the most prevalent wind conditions (from the west to the east), emissions from the traffic would impact, to some extent, the residential area west of Columbia.

The EIR certified by the City of Pittsburg identifies street sweeping as a mitigation measure. According to the EIR "Road dust and PM10 generation by traffic along the truck route can be reduced by frequent street sweeping to remove pulverized materials from the roadway." Street sweeping can actually be contraproductive if not done properly. For this reason, the South Coast Air Quality Management District (SCAQMD) requires the use of PM10-efficient street sweeping equipment which should be available in the marketplace at the beginning of next year. SCAQMD is also requiring the use of curbs or paved outside shoulders to minimize fugitive dust emissions. We propose that the applicant consider the construction of paved shoulders following the guidelines provided in SCAQMD's Rule 1186 entitled "PM10 Emissions from Paved and Unpaved Roads and Livestock Operations." In addition, PDEF may consider facilitating the purchase of PM10 efficient street sweeping equipment when it become available, and the agency responsible for this public service is ready to purchase new street sweeping machinery.

CONCLUSIONS AND RECOMMENDATIONS

Based on the information presented in this supplemental testimony, we cannot recommend approval of the proposed project at this time. Even though most of the issues identified in our March 10, 1999 testimony have been resolved, the following must be done before we can recommend approval of the project:

a) The applicant must provide a valid package of banked offsets which is acceptable to the BAAQMD.
b) The BAAQMD must issue a Final Determination of Compliance, which satisfactorily addresses the concerns raised by ARB and EPA.

The BAAQMD has indicated its intention to certify the sources of offsets listed in **AIR QUALITY Table 3** when the current banking actions are complete, which is expected by the middle of June. They expect to issue the Final Determination of Compliance in late May. If both actions are completed in a satisfactory manner, we will recommend approval of the PDEF project.

PROPOSED CONDITONS OF CERTIFICATION

The following proposed permit conditions are in substantial agreement with the permit conditions included in the Preliminary DOC issued by the BAAQMD on March 19, 1999. Staff's proposed changes to permit conditions for the Pittsburg District Energy Facility are identified with strikeout for language we suggest to delete, and with bold and underline for suggested additions. We have also included, for completeness, a verification section for each one of the permit conditions. These verification sections would be part of the Commission's Conditions of Certification but do not need to be part of the BAAQMD's permit conditions. Staff has discussed the proposed changes to the permit conditions with the applicant and the BAAQMD. The applicant has agreed to the proposed changes to the permit conditions and therefore we anticipate that they will be incorporated in the Final DOC. The conditions which specifiy emission control levels for the gas turbines will also be modified to respond to concerns raised by EPA and ARB. This may result in a decrease in VOC emission limits and a reduction of the amount of VOC needed for this project.

Definitions:

Clock Hour:	Any continuous 60-minute period beginning on the hour.
Calendar Day:	Any continuous 24-hour period beginning at 12:00 AM or 0000 hours.
Year:	Any consecutive twelve-month period of time
Heat Input:	All heat inputs refer to the heat input at the higher heating value (HHV) of the fuel, in BTU/scf.
Rolling 3-hour period:	Any three-hour period that begins on the hour and does not include start-up or shutdown periods.
Firing Hours:	Period of time during which fuel is flowing to a unit, measured in fifteen minute increments.
MM BTU:	million british thermal units
Gas Turbine Start-up:	The lesser of the first 120 minutes of continuous fuel flow to the Gas Turbine after fuel flow is initiated or the period of time from Gas Turbine fuel flow initiation until the requirements listed in Conditions 21(a) through 21(e) are met.
Gas Turbine Shutdown:	The lesser of the 30 minute period immediately prior to the termination of fuel flow to the Gas Turbine or the period of time from non-compliance with any requirement listed in Conditions 21(a) through 21(e) until termination of fuel flow to the Gas Turbine.
Auxiliary Boiler Start-up:	The lesser of the first 120 minutes of continuous fuel flow to an Auxiliary Boiler after fuel flow is initiated; or the period of time from Boiler fuel flow initiation until the requirements listed in Conditions 24(a) through 24(d) are met.

Auxiliary Boiler Shutdown: The lesser of the 30 minute period immediately prior the termination of fuel flow to the Auxiliary Boiler; or the period of time from non-compliance with any requirement listed in Conditions 24(a) through 24(d) until termination of fuel flow to the auxiliary boiler.

Specified PAHs: The polycyclic aromatic hydrocarbons listed below shall be considered to Specified PAHs for these permit conditions. Any emission limits for Specified PAHs refer to the sum of the emissions for all six of the following compounds.

Benzo[a]anthracene
Benzo[b]fluoranthene
Benzo[k]fluoranthene
Benzo[a]pyrene
Dibenzo[a,h]anthracene
Indeno[1,2,3-cd]pyrene

Corrected Concentration: The concentration of any pollutant (generally NO_x, CO, or NH_3) corrected to a standard stack gas oxygen concentration. For emission point P-1 (Gas Turbine S-1 and HRSG S-2) and emission point P-2 (Gas Turbine S-3 and HRSG S-4) the standard stack gas oxygen concentration is 15% O_2 by volume on a dry basis. For emission point P-3 (Auxiliary Boiler S-5), the standard stack gas oxygen concentration is 3% O_2 by volume on a dry basis.

Commissioning Activities: All testing, adjustment, tuning, and calibration activities recommended by the equipment manufacturers and the PDEF construction contractor to insure safe and reliable steady state operation of the gas turbines, heat recovery steam generators, steam turbine, auxiliary boiler, and associated electrical delivery systems.

CONDITIONS FOR THE COMMISSIONING PERIOD

1. The owner/operator of the Pittsburg District Energy Facility (PDEF) shall minimize emissions of carbon monoxide and nitrogen oxides from S-1 & S-3 Gas Turbines, S-2 & S-4 Heat Recovery Steam Generators (HRSG), and S-5 Auxiliary Boiler to the maximum extent possible during the commissioning period. Conditions 1 through 13 shall only apply during the commissioning period as defined above. Unless otherwise indicated, Conditions 14 through 49 shall apply after the commissioning period has ended.

Verification: The owner/operator shall submit a monthly compliance report to the California Energy Commission (CEC) Compliance Project Manager (CPM). In this report the owner/operator shall indicate how this condition is being implemented.

2. At the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor, the combustors of S-1 & S-3 Gas Turbines, S-2 & S-4 Heat Recovery Steam Generators, and S-5 Auxiliary Boiler shall be tuned to minimize the emissions of carbon monoxide and nitrogen oxides.

Verification: In the monthly compliance report the owner/operator shall indicate how this condition is being implemented.

3. At the earliest feasible opportunity in accordance with the recommendations of the equipment manufacturers and the construction contractor, A-1 & A-3 SCR Systems and A-2 & A-4 Oxidation Catalysts shall be installed, adjusted, and operated to minimize the emissions of carbon monoxide and nitrogen oxides from S-1 & S-3 Gas Turbines and S-2 & S-4 Heat Recovery Steam Generators.

Verification: In the monthly compliance report the owner/operator shall indicate how this condition is being implemented.

4. Coincident with the steady-state operation of A-1 & A-3 SCR Systems and A-2 & A-4 Oxidation Catalysts pursuant to conditions 3, 8, and 9, the Gas Turbines (S-1 & S-3) and the HRSGs (S-2 & S-4) shall comply with the NO_x and CO emission limitations specified in conditions 21(a) through 21(d).

Verification: In the monthly compliance report the owner/operator shall indicate how this condition is being implemented.

5. The owner/operator of the PDEF shall submit a plan to the District Permit Services Division and to the CEC CPM at least four weeks prior to first firing of S-1 and S-3 Gas Turbines describing the procedures to be followed during the commissioning of the turbines, HRSGs, auxiliary boiler, and steam turbine. The plan shall include a description of each commissioning activity, the anticipated duration of each activity in hours, and the purpose of the activity. The activities described shall include, but not be limited to, the tuning of the Dry-Low-NO_x combustors, the installation and operation of the SCR systems and oxidation catalysts, the installation, calibration, and testing of the CO and NO_x continuous emission monitors, and any activities requiring the firing of S-1 and S-3 Gas Turbines and S-2 and S-4 HRSGs without abatement by the SCR Systems or oxidation catalysts.

Verification: Submission of a complete plan including information required that useful to establish the procedures to follow for conditions 1 through 3 shall be deemed a verification of this condition.

6. During the commissioning period, the owner/operator of the PDEF shall demonstrate compliance with conditions 11 and 12 through the use of properly

operated and maintained continuous emission monitors and recorders for the following parameters:

firing hours
fuel flow rates
stack gas nitrogen oxide emission concentrations,
stack gas carbon monoxide emission concentrations
stack gas oxygen concentrations.

The monitored parameters shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation) for S-1 and S-3 Gas Turbines, S-2 and S-4 HRSGs, and S-5 Auxiliary Boiler. The owner/operator shall use District-approved methods to calculate heat input rates, nitrogen oxide mass emission rates, carbon monoxide mass emission rates, and NO_x and CO emission concentrations, summarized for each clock hour and each calendar day. All records shall be retained on site for at least 24 months from the date of entry and made available to District personnel upon request.

Verification: The owner/operator shall indicate in the monthly compliance report how this condition is being implemented.

7. The District-approved continuous monitors specified in condition 6 shall be installed, calibrated, and operational prior to first firing of S-1 & S-3 Gas Turbines, S-2 & S-4 Heat Recovery Steam Generators, and S-5 Auxiliary Boiler. After first firing of the turbines and auxiliary boiler, the detection range of these continuous emission monitors shall be adjusted as necessary to accurately measure the resulting range of CO and NO_x emission concentrations. The type, specifications, and location of these monitors shall be subject to District review and approval.

Verification: The owner/operator shall indicate in the monthly compliance report how this condition is being implemented.

8. The total number of firing hours of S-1 Gas Turbine and S-2 Heat Recovery Steam Generator without abatement of nitrogen oxide and carbon monoxide emissions by A-1 SCR System and A-2 Oxidation Catalyst shall not exceed 250 hours during the commissioning period. Such operation of S-1 Gas Turbine and S-2 HRSG without abatement shall be limited to discrete commissioning activities that can only be properly executed without SCR and oxidation catalysts in place. Upon completion of these activities, the owner/operator shall provide written notice to the District Permit Services and Enforcement Divisions and the unused balance of the 250 firing hours without abatement shall expire.

Verification: The owner/operator shall indicate in the monthly compliance report how this condition is being implemented.

9. The total number of firing hours of S-3 Gas Turbine and S-4 Heat Recovery Steam Generator without abatement of nitrogen oxide and carbon monoxide emissions by A-3 SCR System and A-4 Oxidation Catalyst shall not exceed 250 hours during the commissioning period. Such operation of S-3 Gas Turbine and S-4 HRSG without abatement shall be limited to discrete commissioning activities that can only be properly executed without SCR and oxidation catalysts in place. Upon completion of these activities, the owner/operator shall provide written notice to the District Permit Services and Enforcement Divisions and the unused balance of the 250 firing hours without abatement shall expire.

Verification: The owner/operator shall indicate in the monthly compliance report how this condition is being implemented.

10. The total mass emissions of nitrogen oxides, carbon monoxide, precursor organic compounds, PM_{10}, and sulfur dioxide that are emitted by S-1, S-2, S-3, S-4, and S-5 during the commissioning period shall accrue towards the consecutive twelve month emission limits specified in condition 32.

Verification: The owner/operator shall indicate in the monthly compliance report how this condition is being implemented.

11. Combined pollutant emissions from S-1 & S-3 Gas Turbines and S-2 & S-4 Heat Recovery Steam Generators shall not exceed the following limits during the commissioning period. These emission limits shall include emissions resulting from the start-up and shutdown of S-1 & S-3 Gas Turbines.

NO_x (as NO_2)	1,360 pounds per calendar day	616 pounds/hour
CO	6,800 pounds per calendar day	5,053.8 pounds/hour
POC (as CH_4)	720 pounds per calendar day	
PM_{10}	90 pounds per calendar day	
SO_2	15 pounds per calendar day	

Verification: The owner/operator shall indicate in the monthly compliance report how this condition is being implemented.

12. Pollutant emissions from S-5 Auxiliary Boiler shall not exceed the following limits during the commissioning period. These emission limits shall include emissions that occur during S-5 Auxiliary Boiler start-ups.

NO_x (as NO_2)	69.8 pounds per calendar day	2.91 pounds per hour
CO	233.8 pounds per calendar day	9.74 pounds per hour
POC (as CH_4)	8.64 pounds per calendar day	
PM_{10}	31 pounds per calendar day	
SO_2	3.6 pounds per calendar day	

Verification: The owner/operator shall indicate in the monthly compliance report how this condition is being implemented.

13. Prior to the end of the Commissioning Period, the Owner/Operator shall conduct a District and CEC approved source test using external continuous emission monitors to determine compliance with condition 22. The source test shall determine NO_x, CO, and POC emissions during start-up and shutdown of the gas turbines. The POC emissions shall be analyzed for methane and ethane to account for the presence of unburned natural gas. The source test shall include a minimum of three start-up and three shutdown periods. Twenty calendar days before the execution of the source tests, the Owner/Operator shall submit to the District and the CEC Compliance Program Manager (CPM) a detailed source test plan designed to satisfy the requirements of this condition. The District and the CEC CPM will notify the Owner/Operator of any necessary modifications to the plan within 20 working days of receipt of the plan; otherwise, the plan shall be deemed approved. The Owner/Operator shall incorporate the District and CEC CPM comments into the test plan. The Owner/Operator shall notify the District and the CEC CPM within seven (7) working days prior to the planned source testing date. Source test results shall be submitted to the District and the CEC CPM within 30 days of the source testing date.

Verification: Approval of the source test plan and receipt of the source test reports is the verification of compliance with this condition.

Conditions for the Gas Turbines (S-1 & S-3) and the Heat Recovery Steam Generators (HRSGs) (S-2 & S-4).

14. The Gas Turbines (S-1 and S-3) and HRSGs (S-2 and S-4) shall be fired exclusively on natural gas with a maximum sulfur content of 1 grain per 100 standard cubic feet. (BACT for SO_2 and PM_{10})

Verification: The owner/operator shall submit to the CEC CPM an Air Quality Report every January and July. The Air Quality Report shall include two components: an exceptions report, and a complete data report. The exceptions report shall be written, and shall identify all instances where any of the Conditions of Certification have not been met. The complete data report shall be submitted in electronic form, and shall contain all of the data required to demonstrate compliance with the daily and annual limitations on heat inputs and air pollutant emissions. The owner/operator may submit monthly reports in substitution of the semiannual reports with prior approval from the CEC CPM. These monthly reports could be coordinated with the reports required in Condition 42. To demonstrate compliance with respect to the maximum sulfur content of the fuel, the owner/operator shall maintain on site the records of all the guarantees received from its natural gas suppliers indicating that the fuel delivered to PDEF complies with the above limitation. These records shall be made available to the District or the CEC CPM upon request during on-site compliance inspections.

15. The combined heat input rate to each power train consisting of a Gas Turbine and its associated HRSG (S-1 & S-2 and S-3 & S-4) shall not exceed 2,012 MM BTU per hour, averaged over any rolling 3-hour period. (PSD for NO_x)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date and time when the hourly fuel consumption exceeds this hourly limit. The owner/operator must also report any violations of permit conditions in a timely manner, as required in condition 44.

16. The combined heat input rate to each power train consisting of a Gas Turbine and its associated HRSG (S-1 & S-2 and S-3 & S-4) shall not exceed 48,288 MM BTU per calendar day. (PSD for PM_{10})

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date and time when the hourly fuel consumption exceed this daily limit.

17. The combined cumulative heat input rate for both Gas Turbines (S-1 and S-3) and both HRSGs (S-2 and S-4) shall not exceed 32,500,000 MM BTU per year. (Offsets)

Verification: As part of the Air Quality Reports, the owner/operator shall report any violation of this condition.

18. The HRSG duct burners shall not be fired unless its associated Gas Turbine is in operation. (BACT for NO_x, CO, POC)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date, time, and duration of any violation of this permit condition.

19. The Gas Turbine (S-1) and HRSG (S-2) shall be abated by the properly operated and properly maintained Oxidizing Catalyst (A-1) and Selective Catalytic Reduction System (A-2), in series. (BACT for NO_x and CO)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall provide information on any major problem in the operation of the Oxidizing Catalyst and Selective Catalytic Reduction Systems for the Gas Turbines and HRSGs. The information shall include, at a minimum, the date and description of the problem and the steps taken to resolve the problem.

20. The Gas Turbine (S-3) and HRSG (S-4) shall be abated by the properly operated and properly maintained Oxidizing Catalyst (A-3) and Selective Catalytic Reduction System (A-4), in series. (BACT for NO_x and CO)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall provide information on any major problem in the operation of the Oxidizing Catalyst and Selective Catalytic Reduction Systems for the Gas Turbines and HRSGs. The information shall include at a minimum the date and description of the problem and the steps taken to resolve the problem.

21. The owner/operator of the Gas Turbines (S-1 and S-3) and HRSGs (S-2 and S-4) shall meet all of the requirements listed in (a) through (f) below, except during a Gas Turbine Start-up or a Gas Turbine Shutdown. (BACT, PSD, and Toxic Risk Management Policy)

    (a) Nitrogen oxide emissions at P-1 (the combined exhaust point for the S-1 Gas Turbine and the S-2 HRSG after control by the A-1 SCR System and A-2 Oxidation Catalyst) shall not exceed 17.5 pounds per hour, calculated as NO_2, nor 0.009 lbs/MM BTU of natural gas fired. Nitrogen oxide emissions at P-2 (the combined exhaust point for the S-3 Gas Turbine and the S-4 HRSG after control by the A-3 SCR System and A-4 Oxidation Catalyst) shall not exceed 17.5 pounds per hour, calculated as NO_2, nor 0.009 lbs/MM BTU of natural gas fired. (PSD for NO_x)

    (b) The nitrogen oxide concentration at P-1 and P-2 each shall not exceed 2.5 ppmv, corrected to 15% O_2, on a dry basis, averaged over any rolling 3-hour period. (BACT for NO_x)

    (c) Carbon monoxide emissions at P-1 and P-2 each shall not exceed 26.56 pounds per hour, nor 0.0132 lb/MM BTU of natural gas fired. (PSD for CO)

    (d) The carbon monoxide concentration at P-1 and P-2 each shall not exceed 6 ppmv, corrected to 15% O_2, on a dry basis, averaged over any rolling 3-hour period. (BACT for CO)

    (e) Ammonia (NH_3) emissions at P-1 and P-2 each shall not exceed 10 ppmv, corrected to 15% O_2, on a dry basis, averaged over any rolling 3-hour period. This ammonia emission concentration shall be verified by the continuous records of the ammonia injection rate to A-1 and A-2 SCR Systems. The correlation between the gas turbine and HRSG heat input rates, A-1 and A-2 SCR System ammonia injection rates, and corresponding ammonia emission concentration at emission points P-1 and P-2 shall be determined in accordance with permit condition 37. (TRMP for NH_3)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall indicate the date, time, and duration of any violation of this Condition. The owner/operator shall also include quantitative information on the severity of the violation.

22. The pollutant emission rates from each of the Gas Turbines (S-1 and S-3) during a start-up or shutdown shall not exceed the limits established below. These limits apply to any 60-minute period, not a three-hour average. (PSD)

	Start-Up (lbs/hr)	Shutdown (lbs/hr)
Oxides of Nitrogen (as NO_2)	223	58
Carbon Monoxide (CO)	1821	238
Precursor Organic Compounds (as CH_4)	239	253

Within three months after the end of the Commissioning period, the owner/operator shall submit a star-up/shutdown plan designed to minimize emissions during these transient conditions. This plan shall indicate what steps will be taken to start controlling NO_x emissions as soon as practical, including when ammonia can be fed to the SCR system without producing large amounts of ammonia slip. This plan shall be based on the experience gathered from the source tests performed per condition 12 and actual operating experience during the first months of operation. This plan shall also be developed in consultation with the manufacturers selected for the gas turbine, HRSG, control systems, and air pollution control units. This plan shall be submitted to the CEC CPM for approval. After the plan has been approved, the owner/operator shall use the procedures included in the plan to minimize NO_x emissions during these transient conditions.

At the most, 24 months after the end of the Commissioning period, the owner/operator shall provide a report to the District and the CEC CPM with source test and continuous emission monitoring data to establish reasonable maximum hourly emission rates for start-up and shutdown conditions. The new limits established by the District and the CEC CPM shall supercede the limits included in this condition.

Verification: This permit condition will be verified with the implementation of Conditions 13, 34, 35, and 44. In the semiannual Air Quality Reports, the owner/operator shall indicate the date, times and duration of any violation to the NOx or CO limits presented in this condition. Approval of the plan and receipt of the report required by this condition are also part of the verification of compliance with this condition.

23. The Gas Turbines (S-1 and S-3) shall not be in start-up mode simultaneously. (PSD)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall report any violations of this condition.

Conditions for the Auxiliary Boiler (S-5)

24. The Auxiliary Boiler (S-5) shall be fired exclusively on natural gas with a maximum sulfur content of 1 grain per 100 standard cubic feet. (BACT for SO_2 and PM_{10})

Verification: Since the Auxiliary Boilers use the same source of natural gas as the Gas Turbines and the HRSGs, compliance with condition 14 is deemed as compliance with this condition with respect to the sulfur content of the fuel.

25. The heat input rate to the Auxiliary Boiler (S-5) shall not exceed 266 million BTU per hour, averaged over any rolling 3-hour period. (Cumulative Increase)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date and time when the hourly fuel consumption rate exceeds this hourly limit.

26. The cumulative heat input rate to the Auxiliary Boiler (S-5) shall not exceed 399,000 million BTU per year. (Cumulative Increase)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on any violations of this annual fuel consumption limit.

27. The owner/operator of the Auxiliary Boiler (S-5) shall meet all of the requirements listed in (a) through (d) below, except during an Auxiliary Boiler Start-up or an Auxiliary Boiler Shutdown. (BACT, PSD)

    (a) Nitrogen oxide emissions at P-3 (the exhaust point for the Auxiliary Boiler) shall not exceed 2.9 pounds per hour, calculated as NO_2. (PSD for NO_x)

    (b) The nitrogen oxide concentration at P-3 shall not exceed 9.0 ppmv, measured as NO_x, corrected to 3% O_2, on a dry basis, averaged over any rolling 3-hour period. (BACT for NO_x)

    (c) Carbon monoxide emissions at P-3 shall not exceed 9.8 pounds per hour. (PSD for CO)

    (d) The carbon monoxide concentration at P-3 shall not exceed 50 ppmv, corrected to 3% O_2, on a dry basis, averaged over any rolling 3-hour period. (BACT for CO)

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall indicate the date, time, and duration of any violation of this condition. The owner/operator shall also include quantitative information on the severity of the violation.

28. The Auxiliary Boiler (S-5), its burners, combustion chamber, and exhaust system shall be designed and constructed so that the boiler can be retrofitted with an SCR system and/or an oxidizing catalyst in the event the Auxiliary Boiler cannot

consistently comply with the emission limitations specified in condition 27. (BACT for NO_x and CO)

Verification: 45 days prior to the final order for the auxiliary boiler, the owner/operator shall submit a report to the CEC CPM with enough technical information to demonstrate that the boiler could be retrofitted with SCR and/or oxidizing catalyst.

Conditions for All Sources
(S-1, S-2, S-3, S-4, and S-5)

29. The combined heat input rate to the Gas Turbines (S-1 and S-3), HRSGs (S-2 and S-4), and Auxiliary Boiler (S-5) shall not exceed 102,960 million BTU per calendar day. (PSD, CEC Offsets)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date when the daily fuel consumption exceeds this limit.

30. The cumulative heat input rate to the Gas Turbines (S-1 and S-3), HRSGs (S-2 and S-4), and Auxiliary Boiler (S-5) combined shall not exceed 32,900,000 million BTU per year. (Offsets)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date after which this annual limit was exceeded.

31. Total combined emissions from the Gas Turbines, HRSGs, and Auxiliary Boiler (S-1, S-2, S-3, S-4, and S-5), including emissions generated during Gas Turbine Start-ups, Gas Turbine Shutdowns, Auxiliary Boiler Start-ups, and Auxiliary Boiler Shutdowns, shall not exceed the following limits during any calendar day:

(a)	~~1330~~ **1190** pounds of NO_x (as NO_2) per day	~~(CEC Offsets)~~
(b)	5224 pounds of CO per day	(PSD)
(c)	~~1096~~ **907** pounds of POC (as CH_4) per day	~~(CEC Offsets)~~
(d)	842 pounds of PM_{10} per day	(PSD~~, CEC Offsets~~)
(e)	272.4 pounds of SO_2 per day	(BACT)

During days with two cold-start ups (the Gas Turbines have been out of service for more than 72 hours) NO_x daily emissions from the Gas Turbines, and Auxiliarly Boiler (S-1, S-2, S-3, and S-5) shall not exceed 1330 lb/day. The maximum number of days with NO_x emissions above 1190 lb/hr but below 1330 lb/hr shall not exceed 10 per year.

Verification: As part of the semiannual Air Quality Reports, the owner/operator shall indicate the date of any violation of this Condition including quantitative information on the severity of the violation. The reports should also identify the days on which two cold start-ups occurred and the associated maximum emissions.

32. Cumulative emissions from the Gas Turbines, HRSGs, and the Auxiliary Boiler combined (S-1, S-2, S-3, S-4, and S-5), including emissions generated during Gas Turbine Start-ups, Gas Turbine Shutdowns, Auxiliary Boiler Start-ups, and Auxiliary Boiler Shutdowns, shall not exceed the following limits during any consecutive twelve-month period:

(a)	153.2 tons of NO_x (as NO_2) per year	(Offsets, PSD)
(b)	487.5 tons of CO per year	(Cumulative Increase)
(c)	125.3 tons of POC (as CH_4) per year	(Offsets)
(d)	123.55 tons of PM_{10} per year	(Offsets, PSD)
(e)	39.86 tons of SO_2 per year	(Cumulative Increase)

Verification: As part of the Air Quality Reports, the owner/operator shall include information on the date after which these annual limits were exceeded.

33. The maximum projected annual toxic air contaminant emissions from the Gas Turbines, HRSGs, and the Auxiliary Boiler combined (S-1, S-2, S-3, S-4, and S-5) shall not exceed the following limits:

(a) 3,668 pounds of formaldehyde per year
(b) 441.7 pounds of benzene per year
(c) 76.2 pounds of Specified polycyclic aromatic hydrocarbons (PAHs) per year

unless the owner/operator meets the requirements of (d), (e), and (f) below:

(d) The owner/operator shall perform a health risk assessment using the emission rates determined by source test and the most current Bay Area Air Quality Management District (District) approved procedures and unit risk factors in effect at the time of the analysis. The calculated excess cancer risk shall not exceed 1.0 in one million.

(e) The owner/operator shall perform a second risk analysis using the emission rates determined by source test and the procedures and unit risk factors in effect when the Determination of Compliance was issued. The calculated excess cancer risk shall not exceed 1.0 in one million.

(f) Both of these risk analyses shall be submitted to the District and the CEC CPM within 60 days of the source test date. The owner/operator may request that the District and the CEC CPM revise the carcinogenic compound emission limits specified above. If the owner/operator demonstrates to the satisfaction of the APCO that these revised emission limits will satisfy the conditions stated in parts (d) and (e) above, the District and the CEC CPM may, at their discretion, adjust the carcinogenic compound emission limits listed above. (TRMP)

Verification: Compliance with condition 36 shall be deemed as compliance with this condition. In addition, approval by the District and the CEC CPM of the reports

prepared for this condition will constitute a verification of compliance with this condition.

34. The owner/operator shall demonstrate compliance with conditions 15 through 18, 21(a) through 21(e), **22,**23, 25, 27(a) through 27(d), 31(a), 31(b), 32(a), and 32(b) by using properly operated and maintained continuous monitors (during all hours of operation including equipment Start-up and Shutdown periods) for all of the following parameters:

    (a) Firing Hours and Fuel Flow Rates for each of the following sources: S-1 and S-2 combined, S-3 and S-4 combined, and S-5.
    (b) Oxygen (O_2) Concentrations, Nitrogen Oxides (NO_x) Concentrations, and Carbon Monoxide (CO) Concentrations at each of the following exhaust points: P-1, P-2 and P-3.
    (c) Ammonia injection rate at A-1 and A-2 SCR Systems

    The owner/operator shall record all of the above parameters every 15 minutes (excluding normal calibration periods) and shall summarize all of the above parameters for each clock hour. For each calendar day, the owner/operator shall calculate and record the total Firing Hours, the average hourly Fuel Flow Rates, and pollutant emission concentrations.

    The owner/operator shall use the parameters measured above and District-approved calculation methods to calculate the following parameters:

    (c) Heat Input Rate for each of the following sources: S-1 and S-2 combined, S-3 and S-4 combined, and S-5.
    (d) Corrected NO_x concentrations, NO_x mass emissions (as NO_2), corrected CO concentrations, and CO mass emissions at each of the following exhaust points: P-1, P-2, and P-3.

    For each source, source grouping, or exhaust point, the owner/operator shall record the parameters specified in conditions 34(c) and 34(d) every 15 minutes (excluding normal calibration periods). As specified below, the owner/operator shall calculate and record the following data:

    (e) total Heat Input Rate for every clock hour and the average hourly Heat Input Rate for every rolling 3-hour period.
    (f) on an hourly basis, the cumulative total Heat Input Rate for each calendar day for the following: each Gas Turbine and associated HRSG combined, the Auxiliary Boiler, and all five sources (S-1, S-2, S-3, S-4, and S-5) combined.
    (g) the average NO_x mass emissions (as NO_2), CO mass emissions, and corrected NO_x and CO emission concentrations for every clock hour and for every rolling 3-hour period.
    (h) on an hourly basis, the cumulative total NO_x mass emissions (as NO_2) and the cumulative total CO mass emissions, for each calendar day for the following: each Gas Turbine and associated HRSG combined, the Auxiliary Boiler, and all five sources (S-1, S-2, S-3, S-4, and S-5) combined.

(i) For each calendar day, the average hourly Heat Input Rates, Corrected NO_x emission concentrations, NO_x mass emissions (as NO_2), corrected CO emission concentrations, and CO mass emissions for each Gas Turbine and associated HRSG combined and the Auxiliary Boiler.

(j) on a daily basis, the cumulative total NO_x mass emissions (as NO_2) and cumulative total CO mass emissions, for each calendar year for all five sources (S-1, S-2, S-3, S-4, and S-5) combined.

(1-520.1, 9-9-501, BACT, Offsets, NSPS, PSD, Cumulative Increase)

Verification: At least 60 days before the initial operation, the owner/operator shall submit to the CEC CPM a plan on how the measurements and recordings required by this condition will be performed. Submittal of the reports will also provide verification of compliance with this condition.

35. To demonstrate compliance with conditions 22, 31(c) through 31(e), and 32(c) through 32(e), the owner/operator shall calculate and record on a daily basis, the Precursor Organic Compound (POC) mass emissions, Fine Particulate Matter (PM_{10}) mass emissions (including condensable particulate matter), and Sulfur Dioxide (SO_2) mass emissions from each power train and the auxiliary boiler. The owner/operator shall use the actual Heat Input Rates calculated pursuant to condition 34, actual Gas Turbine Start-up Times, actual Gas Turbine Shutdown Times, and CEC and District-approved emission factors to calculate these emissions. The calculated emissions shall be presented as follows:

    (a) For each calendar day, POC, PM_{10}, and SO_2 Emissions shall be summarized for: each power train (Gas Turbine and its respective HRSG combined); the Auxiliary Boiler; and the five sources (S-1, S-2, S-3, S-4, and S-5) combined.

    (b) on a daily basis, the cumulative total POC, PM_{10}, and SO_2 mass emissions, for each year for all five sources (S-1, S-2, S-3, S-4, and S-5) combined.

    (Offsets, PSD, Cumulative Increase)

    Verification: 30 days prior to the expected end of the Commissioning period the owner/applicant shall submit to the CEC CPM a plan on how this condition will be implemented. This plan shall include default emission factors in the absence of source test data. The owner/applicant shall provide a revised plan with the submission of the source test data required in conditions 37, 38, and 39.

36. To demonstrate compliance with Condition 33, the owner/operator shall calculate and record on an annual basis the maximum projected annual emissions of: Formaldehyde, Benzene, and Specified PAH's. Maximum projected annual emissions shall be calculated using the maximum Heat Input Rate of 32,912,920 MM BTU/year and the highest emission factor (pounds of pollutant per MM BTU of Heat Input) determined by any source test at the Gas Turbine, HRSG, or Auxiliary Boiler. (TRMP)

Verification: The owner/operator shall include these calculations in the semiannual reports submitted to the CEC CPM.

37. Within 60 days of start-up of the PDEF, the owner/operator shall conduct a District-approved source test on exhaust point P-1 or P-2 to determine the corrected ammonia (NH_3) emission concentration to determine compliance with condition 21(e). The source test shall determine the correlation between the heat input rates of the gas turbine and associated HRSG, A-1 or A-2 SCR System ammonia injection rate, and the corresponding NH_3 emission concentration at emission point P-1 or P-2. The source test shall be conducted over the expected operating range of the turbine (at a minimum, 60%, 80%, and 100% load) to establish the range of ammonia injection rates necessary to achieve NO_x emission reductions while maintaining ammonia slip levels. Continuing compliance with condition 21(e) shall be demonstrated through calculations of corrected ammonia concentrations based upon the source test correlation and continuous records of ammonia injection rate. (TRMP)

Verification: Approval of the source test protocols and the source test reports shall be deemed as verification for this condition.

38. Within 60 days of start-up of the PDEF and on an annual basis thereafter, the owner/operator shall conduct a District-approved source test on exhaust points P-1 and P-2 while each Gas Turbine and associated Heat Recovery Steam Generator are operating at maximum allowable operating rates to determine compliance with Conditions 21 and 31 and to verify the accuracy of the continuous emission monitors required in condition 34. The owner/operator shall test for (as a minimum): water content, stack gas flow rate, oxygen concentration, precursor organic compound concentration and emissions, methane, ethane, and particulate matter (PM_{10}) emissions including condensable particulate matter. (BACT, offsets)

Verification: Approval of the source test protocols, as required in condition 40, and the source test reports shall be deemed as verification for this condition. The owner/operator shall notify the District and the CEC CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CEC CPM within 30 days of the date of the tests.

39. Within 60 days of start-up of the PDEF and on an annual basis thereafter, the owner/operator shall conduct a District approved source test on exhaust point P-3 while the Auxiliary Boiler (S-5) is operating at maximum allowable operating rates to determine compliance with Conditions 27 and 31 and to verify the accuracy of the continuous emission monitors required in condition 34. The owner/operator shall test for (as a minimum): water content, stack gas flow rate, oxygen concentration, precursor organic compound concentration and emissions, and particulate matter (PM_{10}) emissions including condensable particulate matter. (BACT, offsets)

Verification: Approval of the source test protocols, as required in condition 40, and the source test reports shall be deemed as verification for this condition. The owner/operator shall notify the District and the CEC CPM within seven (7) working days before the execution of the source tests required in this condition. Source test results shall be submitted to the District and to the CEC CPM within 30 days of the date of the tests.

40. The owner/operator shall obtain approval for all source test procedures from the District's Source Test Section and the CEC CPM prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emission monitors as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section and the CEC CPM in writing of the source test protocols and projected test dates at least 7 days prior to the testing date(s). As indicated above, the Owner/Operator shall measure the contribution of condensable PM (back half) to the total PM_{10} emissions. However, the Owner/Operator may propose alternative measuring techniques to measure condensable PM such as the use of a dilution tunnel or other appropriate method used to capture semi-volatile organic compounds. Source test results shall be submitted to the District and the CEC CPM within 30 days of conducting the tests. (BACT)

Verification: Approval of the source test procedures and receipt of source test results will be deemed as verification of this condition.

41. Within 60 days of start-up of the PDEF and on an biennial basis (once every two years) thereafter, the owner/operator shall conduct a District-approved source test on exhaust point P-1 or P-2 while the Gas Turbine and associated Heat Recovery Steam Generator are operating at maximum allowable operating rates to demonstrate compliance with Condition 33. Unless the requirements of condition 41(b) have been met, the owner/operator shall determine the formaldehyde, benzene, and Specified PAH emission rates (in pounds/MM BTU). If any of the above pollutants are not detected (below the analytical detection limit), the emission concentration for that pollutant shall be deemed to be one half (50%) of the detection limit concentration. (TRMP)

    (a) The owner/operator shall calculate the maximum projected annual emission rate for each pollutant by multiplying the pollutant emission rate (in pounds/MM BTU; determined by source testing) by 32,912,920 MM BTU/year.

    (b) If three consecutive biennial source tests demonstrate that the emission rates calculated pursuant to part (a) for any of the compounds listed below are less than the annual emission rates shown, then the owner/operator may discontinue future testing for that pollutant:

Benzene	≤	221 pounds/year
Formaldehyde	≤	1,834 pounds/year
Specified PAH's	≤	38 pounds/year

(TRMP)

Verification: The owner/operator shall notify the District and the CEC CPM within seven (7) working days before the owner/operator plans to conduct source testing as required by this condition. Source test results shall be submitted to the District and the CEC CPM within thirty (30) days of conducting the test.

42. The owner/operator shall submit all reports (including, but not limited to: monthly CEM reports, monitor breakdown reports, emission excess reports, equipment breakdown reports, etc.) as required by District Rules or Regulations and in accordance with all procedures and time limits specified in the Rule, Regulation, Manual of Procedures, or Enforcement Division Policies & Procedures Manual. (2-6-502)

Verification: Submittal of the reports to the CEC CPM constitutes verification of compliance of this condition. All reports shall be submitted to the CEC CPM within thirty (30) days after they are due according to District Rules and Regulations.

43. The owner/operator shall maintain all records and reports on site for a minimum of 5 years. These records shall include but are not limited to: continuous monitoring records (firing hours, fuel flows, emissions, monitor excesses, breakdowns, etc.), source test and analytical records, emission calculation records, records of plant upsets and related incidents. The owner/operator shall make all records and reports available to District and the CEC CPM staff upon request. (2-6-501)

Verification: During site inspection, the owner/operator shall make all records and reports available to the District, California Air Resources Board, and CEC staffs.

44. The owner/operator shall notify the District and the CEC CPM of any violations of these permit conditions. Notification shall be submitted in a timely manner, in accordance with all applicable District Rules, Regulations, and the Manual of Procedures. Not withstanding the notification and reporting requirements given in any District Rule, Regulation, or the Manual of Procedures, the owner/operator shall submit written notification (facsimile is acceptable) to the Enforcement Division within 96 hours of the violation of any permit condition. (2-1-403)

Verification: Submittal of these notifications as required by this condition is the verification of these permit conditions. In addition, as part of the Air Quality Reports, the owner/operator shall include information on the dates when these violations occurred and when the owner/operator notified the District and the CEC CPM.

45. The stack heights of the emission points P-1 and P-2 shall be at least 150 feet above mean sea level (approximately 138.8 feet above grade level at the stack base). The

stack height of the emission point P-3 shall be at least 100.6 feet above mean sea level (approximately 88.6 feet above grade level at the stack base). (PSD, TRMP)

Verification: 45 days prior to the release to the manufacturer of the emission stack's "approved for construction" drawings, the Owner/Operator shall submit the drawings to the CEC CPM for review and approval.

46. The Owner/Operator of PDEF shall provide adequate stack sampling ports and platforms to enable the performance of source testing. The location and configuration of the stack sampling ports shall be subject to BAAQMD review and approval. (1-501)

Verification: One hundred and twenty (120) days before initial operation, the Owner/Operator shall submit to the BAAQMD and the CEC CPM a plan for the installation of stack sampling ports and platforms. Within sixty (60) days of receipt of the plant, the BAAQMD will advise the Owner/Operator and the CEC CPM of the acceptability of the plan; otherwise the plan shall be deemed approved.

47. Within 180 days of the issuance of the Authority to Construct, the Owner/Operator shall contact the BAAQMD Technical Services Division regarding requirements for the continuous monitors, sampling ports, platforms, and source tests required by Conditions 37, 38, 39, and 41. All source testing and monitoring shall be conducted in accordance with the BAAQMD Manual of Procedures. (1-501)

Verification: The owner/operator shall notify the CEC CPM at least seven (7) working days before these meeting are held.

48. Prior to ~~the issuance of the BAAQMD Permit to Operate~~ **the start of construction of** ~~for~~ this facility, the Owner/Operator of PDEF shall provide emission offsets in the amount of 176.18 tons/year of Nitrogen Oxides, 144 tons/year of Precursor Organic Compounds, and 123.55 tons/year of PM_{10} or equivalent as defined by District Regulations 2-2-302.1, 2-2-302.2, and 2-2-303.1. (offsets)

Verification: At least 30 days prior to the start of construction, the owner/operator must submit a copy of the required offsets or emission reduction credits (ERCs) to the CEC CPM.

49. Pursuant to BAAQMD Regulation 2, Rule 6, section 404.1, the owner/operator of PDEF shall submit an application to the District for a Federal (Title V) Operating Permit within 12 months of the date of issuance of the BAAQMD Permit to Operate for the PDEF. (2-6-404.1)

Verification: The owner/operator shall notify the CEC CPM of the submittal of this application. In addition, the owner/operator shall submit to the CPM a copy of the Federal (Title V) Operating Permit within 30 days after it is issue by the District.

1) ADDITIONAL PERMIT CONDITIONS NOT INLCUDED IN THE PDOC.

The following permit condition plus the construction related permit conditions included in the March 1999 Staff Assessment would be the only permit conditions that would not be part the permit conditions issued by the BAAQMD.

50. The cooling towers shall be properly installed and maintained to minimize drift losses. The cooling towers shall be equipped with high efficiency mist eliminators with a minimum guarantee drift rate of 0.0005%. The maximum total dissolved solids (TDS) sampled at the based of the cooling tower or at the point of return to the wastewater facility shall not be higher than 2550 mg/l. The owner/operator shall sample the water at least once a day.

Verification: The owner/operator shall submit to the CEC CPM a guarantee letter from the cooling tower manufacturer prior to its installation. As part of the compliance record, the owner/operator shall keep records on-site on the TSD content of water in the cooling water.

REFERENCES

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